UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,994	12/22/2005	Takeyoshi Dohi	052448	6133

38834 7590 06/09/2008

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER	
TANNER, JOCELIN C	

ART UNIT	PAPER NUMBER
4133	

MAIL DATE	DELIVERY MODE
06/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,994	DOHI ET AL.	
	Examiner	Art Unit	
	JOCELIN C. TANNER	4133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/20/2005 and 7/20/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is in response to the application filed on December 22, 2005 in which claims 1-10 are presented for examination.

Status of Claims

Claims 1-10 are pending, of which 3 are in independent form. Claims 1, 8/1, 9 and 10/1 are rejected under 35 U.S.C. 102(b) and claims 2, 8/2, 10/2, 3, 8/3, 10/3, 4, 8/4, 10/4, 5, 8/5, 10/5, 6, 8/6, 10/6, 7, 8/7, and 10/7 are rejected under 35 U.S.C. 103(a).

Information Disclosure Statement

The information disclosure statements (IDS) submitted on April 20, 2005 and July 20, 2005 were filed before and after the mailing date of the patent application on December 22, 2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

The informal drawings are not of sufficient quality to permit examination. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action because of the extraneous non-English characters. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the

changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

Applicant is given a TWO MONTH time period to submit new drawings in compliance with 37 CFR 1.81. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a). Failure to timely submit replacement drawing sheets will result in ABANDONMENT of the application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 9, the recitation, “for giving an arbitrary amount of advance/retraction to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio (#1) with respect to the amount of advance/retraction given to the first output shaft,” renders the claim vague and indefinite because it is unclear how an arbitrary amount of advance/retraction can be given to the first output shaft while constantly giving to the second output shaft an amount of advance/retraction at a constant ratio (≠1).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 8/1 and 10/1 are rejected under 35 U.S.C. 102(b) as being anticipated by Paltieli (US Patent No. 5,647,373).

Regarding claims 1, 8/1 and 10/1, Paltieli discloses an apparatus or "positioning unit" that holds a needle guide or "movable member" (5) and changes a placement angle of the movable member to perform positioning of a distal end of the movable member wherein the angle of the needle axis is changed with respect to the skin surface (column 4, lines 54-56), including:

first and second links or "output shafts" (FIG. 2, elements #42 and #43) whose distal ends are pivotably connected (8) with the movable member and are parallel to each other and capable of reciprocating wherein the link (42) longitudinally slides in and out of the sleeve and link (43) alternately moves back and forth; and servo-motor or drive means (25, 45). Regarding the recitation, "for giving an arbitrary amount of advance/retraction to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio (≠1) with respect to the amount of advance/retraction given to the first output shaft," the Examiner notes that Paltieli discloses drive means (25, 45) which give an arbitrary, individually controllable amount of advance/ retraction to the first shaft and a second amount of advance/retraction to the second shaft that is different (i.e. ≠1) than the amount to the first shaft.

3. Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa et al (US Patent No. 5,577,414).

Regarding claim 9, Ogawa et al discloses an articulated robot or "positioning arm" that holds a wrist unit or "movable member" (8) and changes a placement angle of the movable member (FIG. 3, element #8) to perform positioning of a distal end of the movable member (column 4, lines 9-11), including:

a first unit that holds the movable member (8); and a

second unit that holds the first unit

the first unit including: "first and second output shafts" (FIG. 5, elements #5 and #52) whose distal ends are pivotably connected with the movable member via element #53 and which are provided parallel to each other and capable of reciprocating wherein forward movement in one direction constitutes advancement and movement in an opposite direction constitutes retraction (FIGS. #4 and #5); and motor or "drive means" (23 and 51). Regarding the functional recitation, "for giving an arbitrary amount of advance/retraction given to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio (≠I) with respect to the amount of advance/retraction given to the first output shaft," the Examiner notes that motor (51) moves shaft (5) by an amount not equal to the amount by which shaft 3 moves (see FIG. 1(a));

the second unit including: "third and fourth output shafts" (FIG. 5, elements #2 and #3) whose distal ends are pivotably connected with the casing of the first unit (column 3, lines 1-4) and which are provided parallel to each other and capable of

reciprocating, the third and fourth output shafts being respectively orthogonal to the first and second output shafts of the first unit; and motor or "drive means" (13). Regarding the functional recitation, "for giving an arbitrary amount of advance/retraction given to the first output shaft and constantly giving to the second output shaft an amount of advance/retraction at a constant ratio (≠I) with respect to the amount of advance/retraction given to the first output shaft," the Examiner notes that motor (13) moves shaft (2) by an amount not equal to the amount by which shaft 3 moves, thus providing an imbalanced advance/retraction ratio (≠I) (see FIG. 1(a)).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 8/2, 10/2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paltieli (US Patent No. 5,647,373) in view of Jensen (US Patent No. 5,800,423).

Regarding claims 2, 8/2, and 10/2, Paltieli discloses all of the limitations previously discussed in claim 1. Paltieli fails to disclose external threads of the first and second output shafts and first and second nuts in which the external threads are threaded.

Jensen further discloses members or "output shafts" (14' and 15') in which a portion of the shaft can be provided with lead screws or "external threads" (column 7,

lines 19-21, FIG. 4, elements #42 and #44). The members (14' and 15') are threaded within the tubular members or "first nut and second nut" (46 and 48).

Since Paltieli and Jensen teach known devices, i.e. devices for controlling movement of surgical instrument during surgery, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the output shafts of Paltieli with threading, as taught by Jensen, for the predictable result of providing accurate positional control during manipulation by controlling axial length adjustment.

5. Claims 3, 4, 8/3, 8/4, 10/3 and 10/4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paltieli (US Patent No. 5,647,373) in view of Jensen (US Patent No. 5,800,423) further in view of Falcou et al (US Patent No. 6,928,894).

Regarding claims 3, 8/3, 10/3, 4, 8/3, and 10/3, the combination of Paltieli and Jensen discloses all of the limitations previously discussed. However, the combination of Paltieli and Jensen fails to disclose different leads of external thread formed in the first and second output shafts and different speeds of rotation of the first and second nut.

Falcou teaches the use of different external thread or "thread pitches" or threads for the deployment of different speeds of actuators (column 6, lines 23-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the output shafts with different thread pitches, as taught by Falcou, and to rotate the output shafts connected to the threads of the

tubular members or "nuts" in the combination of Paltieli and Jensen, thus producing different speeds of rotation due to the different threading of each output shaft. Changing the external threads assists in the synchronization or non-synchronization of the parallel shafts when surgically manipulating in constrained areas.

6. Claims 5, 8/5, and 10/5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paltieli (US Patent No. 5,647,373) in view of Taylor et al (US Patent No. 5,397,323).

Regarding claims 5, 8/5, and 10/5, Paltieli discloses all of the limitations previously discussed except for racks formed in the first and second output shafts, first and second pinions that are engaged with the racks.

Taylor et al teach center-of-motion or positioning unit including a rolling surfaces or "rack" (FIG. 6, elements #605 and #606) and roller elements or "pinions" (FIG. 6, elements #603 and #604) that are used to constrain angle adjustment procedures.

Because the devices of Paltieli and Taylor et al teach known devices, i.e. surgical manipulation devices, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the technique of racks and pinions to the positioning device of Paltieli, as taught by Taylor et al for the predictable result of providing constraint with angle adjustment procedures.

7. Claims 6, 8/6, and 10/6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paltieli (US Patent No. 5,647,373) in view of Taylor et al (US Patent No. 5,397,323) further in view of Luce et al (US Patent No. 5,381,196)

Regarding claims 6, 8/6, and 10/6, the combination of Paltieli and Jensen and Taylor discloses all of the limitations previously discussed. The combination of Paltieli and Taylor fails to disclose different reference pitches of the racks formed in the first and second output shafts.

Luce et al teaches varying factors of rotational systems, i.e. pitch, a suitable speed and precision can be achieved (column 4, lines 43-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the known technique of varying the reference pitch of racks of the positioning device of the combination of Paltieli and Taylor et al, as taught by Luce et al, for the predictable result of obtaining suitable speeds and precision of each output shaft for enhanced control of the positioning device.

8. Claims 7, 8/7, and 10/7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paltieli (US Patent No. 5,647,373) in view of Taylor et al (US Patent No. 5,397,323) further in view of Surdilla (US Patent No. 4,515,296).

Regarding claims 7, 8/7, and 10/7 the combination of Paltieli and Taylor discloses all of the limitations previously discussed. The combination of Paltieli and

Taylor fails to disclose a different speed of rotation of between the first and second pinions.

Surdilla teaches the use of rack and pinions in obtaining different speeds by using a first pinion having 20 teeth and a second pinion having 40 teeth in which the rack engages. The second pinion will have to linearly travel twice the distance and velocity traveled by the first pinion, thus producing different speeds.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the known technique of varying the teeth of pinions to the positioning device of the combination of Paltieli and Taylor et al, as taught by Surdilla, for the predictable result of providing different speeds to each output shaft for enhanced control of the positioning device.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura (US Patent No. 5,441,505), Charles et al (US Patent No. 6,723,106), and Mizuno et al (US Patent No. 5,876,325) are related to medical manipulation and positioning devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOCELIN C. TANNER whose telephone number is (571)270-5202. The examiner can normally be reached on Monday through Thursday between 9am and 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Coby can be reached on 571-272-4017. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jocelin C. Tanner/
Examiner, Art Unit 4133

5/15/2008
/Frantz Coby/
Supervisory Patent Examiner
Art Unit 4133